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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,893	12/22/2004	Hannu Koivikko	18514	2864

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EXAMINER

BRUNSMAN, DAVID M

ART UNIT	PAPER NUMBER
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1755

DATE MAILED: 09/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/518,893

Applicant(s)

KOIVIKKO ET AL.

Examiner

David M. Brunsman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21, 23-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 23-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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Applicant's response, including amendment, filed 15 May 2006 has been carefully considered. Applicant notes the intention to file a terminal disclaimer in response to the non-statutory obviousness-type double patenting rejection when the claims are found otherwise allowable. Applicant's response accedes to the obviousness-type double patenting rejection without traverse. Examiner notes said terminal disclaimer must be filed in response to a final rejection in order to be considered timely. This action has been made final.

The instant amendments to the claims may be construed in two ways. First, the amendment replaces the claims to a "process of removing crystallization inhibitors" with claims to a "process of removing crystallization inhibitors" "followed by crystallization". A process including treatment of the purified stream and subsequent crystallization thereof after the crystallization inhibitors of the original claims have been removed is patentably distinct from the original claims. Such a construction would render all pending claims nonelected by original presentation and the response, nonresponsive. Second, the recitations of the crystallization process could be construed as recitations of the intended future use of the product of the originally presented claims, modifying those claims to exclude processes that produce a product that cannot be used in the recited crystallization process. As the first construction would render the response non-responsive, this action will treat the claims under the second construction.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "proprietary layers" is indefinite in scope and meaning. The term fails to set forth that which the layer is composed of or its structure.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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Claim 20 is rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. Material critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). There is no description allowing on of ordinary skill in the art the ability to make said "proprietary layers".

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer.

A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 2, 4-8, 10-19, 21, 23-28, 32-38, 44 and 45 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 24-35, 37, 38, 41, 45 and 47 of U.S. Patent No. 6872316. Although the conflicting claims are not identical, they are not patentably distinct from each other. The reference claims recite a process of producing xylose from an enzymatic and acid hydrolysis of a xylan containing vegetable material by subjecting it to nanofiltration to produce a permeate enriched in xylose and a retentate enriched in oligosaccharides and hexose sugars. One must consult the specification for the definition of the materials used and produced by the claimed process. The hydrolysate employed is a biomass hydrolysate obtained from spent liquor from a pulping process or a xylose containing fraction chromatographically obtained therefrom. The retentate formed including hexose sugars as well as xylo- di and oligosaccharides. Claims 24 recites a nanofiltration pressure of 10-50 bar, claim 25, 15-35 bar. Claims 26 and 27 recite temperatures of 5-95 C and 30-60C. Claim 28 recites a flux of 10-100 l/mh. Claims 29-31 recite molecular weight cut-offs of 100-2500D, 150-1000D and 150-500D, respectively. Claims 32-38 recite structural limitations of the nanofiltration membrane identical to instant claim 16-19, 21 and 22.

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Claim 41 recites repeating the nanofiltration at least once. Claims 45 and 47 recite pre and post treatments of ion exchange, ultrafiltration, chromatography, concentration, pH adjustment, filtration, dilution, crystallization, reverse osmosis and combinations thereof.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-7, 9-21, 23-26, 32, 33, 39, 41, 44 and 45 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5869297.

The reference teaches a process of purifying dextrose obtained by an acidic enzymatic hydrolysis of starch to form a feed stream comprising dextrose and di and tri oligomers thereof, nanofiltering the stream using a sulfonated polyether sulfone membrane such as Desal™ 5, having a molecular weight cut-off of 200-300D, at a temperature of 45 C, a pressure of about 30 bar and a flux of about 6-20lmh, to produce a retentate rich in the higher molecular weight compounds and a permeate of substantially pure dextrose. See examples 1-4 and the descriptions of nanofiltration membranes at column 3, line 43 through column 6, line 21. There is no evidence of record that the product of the reference process cannot be employed in the crystallization process recited in the instant amendment. Applicant further argues that the reference does not recognize that crystallization inhibitors are removed in the nanofiltration step. The reference explicitly teaches di and higher oligomers are removed in the nanofiltration step. Not only would the basic scientific and engineering

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principles in this art recognize the basic tenets of crystallization that purer solutions are easier to crystallize but, the same compounds removed by the process of the instant specification are removed in the process of the reference.

Claims 1, 3-7, 10-21, 23, 33, 35, 43-45 are rejected under 35 U.S.C. 102(a or e) as being anticipated by US 6406546.

Example 1 of the reference teaches a process for separating sucrose from invert sugar (dextrose + fructose), obtained from mother liquor of a crystallization stream, including a prefilter step using ultrafiltration wherein the feedstream is separated by a Desal™ 5 nanofiltration membrane having a cut-off of 150-300D operating at about 65 C, 35 bar and 14lmh, to produce a retentate of the higher molecular weight sugars and a *permeate rich in fructose* that may be further treated by reverse osmosis. Figure 5 shows the nanofiltration system using repeated filtration steps. That the retentate of the reference process is subjected to later crystallization is not evidence that the permeate described therein is excluded from a separate crystallization. There is no evidence of record that the product of the reference process cannot be employed in the crystallization process recited in the instant amendment. Applicant further argues that the reference does not recognize that crystallization inhibitors are removed in the nanofiltration step. The reference explicitly teaches di and higher oligomers are removed in the nanofiltration step. Not only would the basic scientific and engineering principles in this art recognize the basic tenets of crystallization that purer solutions are easier to crystallize but, the same compounds removed by the process of the instant specification are removed in the process of the reference.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 2, 8, 27-31, 34-38, 40 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over 5869297, in view of applicants admissions in the specification with respect to the background art.

Claims 2, 8 and 34 -38 differ from the 297 patent in that they recite separation of xylose. The patent teaches reducing monosaccharides may be separated from higher molecular weight sugars and dimers and trimers thereof using nanofiltration. The similar molecular weights of each are evidence that the process of the 297 patent would be expected to operate similarly well to separate xylose from its dimers and trimers. The specification admits at page that it is known to obtain a xylose feedstream from the chromatographic separation using a column packed with cation and anion exchange resins in monovalent or divalent metal form (see instant claims 27-31) of spent sulphite liquor and the mother liquor from the crystallization of xylose. It would have been obvious to one of ordinary skill in the art to employ the xylose feeds of claims 2-8 and 34-38 for those reasons. Instant claim 32 appears to simply recite the most common commercially available forms of ion exchange resins. It would have been obvious to one of ordinary skill in the art to employ them for that reason.

Page 1 of the specification admits it is known to obtain a fructose stream from the chromatographic separation of hydrolyzed and isomerized saccharose. It would have been obvious to one of ordinary skill in the art to employ a fructose stream from the chromatographic separation of hydrolyzed and isomerized saccharose as recited in claims 40 and 42 for that reason.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to David M. Brunsman whose telephone number is 571-272-1365. The examiner can normally be reached on M, Th, F, Sa; 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1362. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

David M Brunsman  
Primary Examiner  
Art Unit 1755

DMB

A handwritten signature in black ink, appearing to read 'David M. Brunsman', with a long horizontal stroke extending to the right.